l’activité et la participation (T-score pondéré). Étaient également calculées les moyennes des scores bruts obtenus à chaque échelle, pondérées ou non selon les mêmes critères. La distribution normale des T-scores et des moyennes était testée par le test de Kolmogorov-Smirnov et leurs corrélations par Rho de Spearman.

Résultats.– Cent trente-neuf patients-toxine ont été inclus, donnant un total de 541 échelles dont 537 qui ont pu être analysés pour l’étude. Les T-scores (56,77 ± 10,21) et les moyennes de scores bruts (0,49 ± 0,74) étaient très fortement corrélées (p = 0,099). Les T-scores pondérés et les moyennes pondérés suivraient une distribution normale. En revanche, les T-scores et des moyennes NON pondérés ne suivait pas une loi normale (p = 0,013 et 0,011).

Discussion.– Vu la forte corrélation des T-scores et des moyennes des scores bruts dans notre étude, le calcul de T-score peut raisonnablement être remplacé par le calcul de la moyenne des scores bruts en pratique clinique. Malgré son appellation de « T-score », la formule de Kiresuk ne permet pas forcément une normalisation des scores. Les implications de l’utilisation du T-score dans les études de groupe seront discutées.

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Matelas de correction cervico-céphalique : nouveau traitement du torticolis et de la plagiocéphalie du nourrisson

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Mots clés : Plagiocéphalie ; Torticolis ; Nourrisson ; Matelas


Méthode.– Étude prospective concernant 18 nourrissons (âge moyen de cinq mois) présentant une plagiocéphalie posturale secondaire asymétrique en lien avec un torticolis. Mesures anthropométriques au temps initial et après traitement : par empreintes crânienne au ruban plombé, calcul du Cranial Vault Asymetry Index (CVAI), classification en cinq degrés de sévérité (à cinq étant le plus sévère) de la plagiocéphalie [2] et de l’index céphalique (IC) représentant une évaluation de la brachycéphalie.

Résultats.– Après traitement on note une réduction significative du CVAI de 8,69 à 5,33 (p < 0,0001, test t pairé), du degré de sévérité qui passe de 3,6 à 2,3 (p = 0,0001, test t pairé), sans modification de l’IC 91 versus 0,92 (p = 0,503, test t pairé). De plus, l’efficacité est corrélée à l’âge de début de traitement (Spearman r = 0,70, p = 0,008), plus le traitement est commencé jeune plus celui-ci est efficace.

Discussion et conclusion.– Notre étude montre une efficacité de l’utilisation du matelas quant à la diminution de l’asymétrie crânienne et donc de la plagiocéphalie sans majorer la brachycéphalie (IC). Elle confirme l’intérêt d’une prise en charge précoce.

Références


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English version

CO10-001-e

Update on the treatment of childhood movement disorders: Focus on dystonia

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Keywords: Dystonia; Therapy; L-dopa; Anticholinergics; Botulinum toxin; Deep brain stimulation

Dystonia represents the most common form of non paroxysmal movement disorders in childhood. Dystonia treatment is often a challenging situation for the physician.

Material and methods.– Based on a systematic review of the literature and on our personal experience, we propose an update regarding the therapeutic management of childhood dystonia.

Attenuation of the abnormal movements, improvement of the functional disabilities and alleviation of painful manifestations are idealistic objectives of the treatment. Therapeutic strategy depends on:
– the phenomenology of the dystonic movements (hyperkinetic/fixed dystonia);
– topography, extension and functional disability;
– mixed motor disorders (especially associated spasticity);
– etiology of the dystonic symptoms;
– age of the patient;
– potential drug-induced adverse events given the clinical status of the patients;

– associated comorbidities.

Sometimes, the abnormal movements are part of a treatable disorder; these situations must be identified and a specific treatment should be initiated rapidly (Wilsoms disease, creatine deficiency, organic aciduria).

Most of the time, therapies for dystonia are purely symptomatic. Rehabilitation methods (physiotherapy, speech therapy and occupational therapy, psycho-social support) and adapted equipment and procedures (special computer keyboards, pictograms, voice synthesizers) are very important in the management of the patients. Various drugs are available: anticholinergics, dopaminergics, dopamine antagonists, muscle relaxants. Their efficacy is sometimes limited, and their indications will be discussed. Specific pediatric studies are needed to clarify the efficacy, safety and optimal dose of botulinum toxin in childhood dystonia.

The progress of functional neurosurgery has open new therapeutic options; functional results of deep brain stimulation are good in primary dystonias, and more heterogeneous in secondary dystonias.

Conclusion.– A careful physical examination and a comprehensive and multidisciplinary work-up are mandatory for the elaboration of a therapeutic strategy. The therapeutic approach must be individually tailored, and must be discussed with both the patient and the parents.

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Electromyographic analysis of progressive equinus in typically developing children

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Keywords: Cerebral palsy; Lower limb; Electromyography; Equinus; Gait Objective.– The purpose of this study was to measure the muscular activity of the main muscular groups of the lower limbs of healthy children according to the degree of plantarflexion imposed by an orthosis which simulate an unilateral progressive equinus.

Method.– A 3D gait analysis an electromyographic analysis was performed for 10 healthy children with the non-adjusted orthosis (OL), with the orthosis adjusted to 10°, 0°, –10°, –20° of ankle dorsiflexion and maximum plantarflexion (MP). The muscular envelopes were calculated for the soleus

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(SOL), tibialis anterior (TA), vastus lateralis (VL), rectus femoris (RF) and hamstring (HA) and were compared between lower limbs according to the degree of induce equinus. The data were divided into nine intervals in relation to the phases of the motion as described by Perry.

Results.– On the lower limb with the orthosis, the activation of the SOL was earlier from 73–100% and 0–50% of the cycle (coactivation SOL-TA) and the amplitude increase from − 10° of dorsiflexion (P < 0.01). From 0 to 10% of cycle, the TA amplitude decreases from − 20° (P < 0.01). From −10° of dorsiflexion, the HA activation significantly increase from 0 to 10% of the cycle. The DA activation decrease from 0–10% cycle (P < 0.05) and like the VL, a muscular activation appear in the middle of stance phase − 20° (VL 20–30%: P < 0.05). The contralateral limb, SOL activated earlier from 87–100% and 0–10% at MP (P < 0.01).

Discussion.– Equinus gait secondary to the orthosis induced changes in muscle activation both in terms of timing and in terms of signal amplitude. The premature activation of SOL, the TA-SOL coactivation and the reduce TA amplitude are frequently observed during cerebral palsy gait. These findings in healthy children show that a foot deformation without neurological disturbance induce primary changes in muscle activation, which must be taken into account during interpretation in motion analysis.

Further reading


References


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Impairment profile of shoulder muscle strength in children with brachial plexus palsy at birth

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Keywords: Brachial plexus palsy; Shoulder; Strength; Children

Introduction.– Brachial plexus palsy (BPP) at birth can lead to severe functional limitations of the whole-upper limb. Although shoulder muscle strength loss and imbalance are central to the loss of upper-limb function associated with BPP, biomechanical and clinical assessments of muscle strength are rarely reported for this population. Thus, the aim of this study was to quantitatively evaluate the muscle strength impairment profile in a group of children with unilateral BPP. In addition, the validity and reliability of the current methodologies was tested.

Methods.– Ten children with unilateral BPP (mean age = 12.31, SD = 3.28) underwent the following assessments in both shoulders: (1) three trials of maximal isometric contractions in flexion/extension, internal/external rotation, and abduction/adduction using a hand held dynamometer, (2) maximal isometric contractions of flexion/extension using a Biodex®. The maximal values of the involved shoulder were compared to the non-involved one.

Results.– The concurrent validity between the hand held dynamometer and BiodeX® measures was excellent (r² = 0.81). The inter-trial reliability was also excellent (ICC between 0.94 and 0.98), regardless of the direction and side. The comparison between sides showed significant differences in all directions (P-values ranged from 0.036–0.0009), except for flexion. External rotation and extension were the most impaired directions, with average strength impaired/ non-impaired shoulder ratios of 30% and 40%.

Discussion.– This study provides the first comprehensive quantitative measurement of shoulder muscle strength using a hand held and motorized dynamometer in children with BPP. Future work will relate specific patterns of weakness to resultant bony and muscle deformity and functional limitations.

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T-score computer-calculation in Goal Attainment Scales does not provide further information than hand-calculation of simple mean scores: Analysis of 537 GAS scales


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Keywords: GAS; Personal goals; Scale; Botulinum toxin

Goal Attainment Scaling (GAS) is a method of measuring progress towards individual goals. GAS is originally a 5-points scale, that represent baseline and different levels of goal attainment. It is possible to calculate by an Excel calculation sheet a T-score that gives the overall result of the different scales of one patient using Kiresuk’s forumulae. The aim of this study was to compare T-scores and simple means of GAS raw scores.

For 2 years all patients, aged 2–20 presenting a motor handicap that needed botulinum toxin treatment were included. One to seven GAS scales were written per patients and results were assessed 8 weeks after treatment. T-scores were